

What Is Claimed Is:

1. A ram guidance system for a stamping press having a reciprocating rod, said system comprising:
  - an outer bush mounted to a portion of a stamping press and comprising a central passageway sized and arranged so that a rod of said stamping press extends through said passageway;
  - an inner bush coaxially mounted to said outer bush and a portion of said rod; and
  - an anti-friction bearing assembly positioned between said outer bush and said inner bush so as to guide their relative movement.
2. A ram guidance system according to claim 1 wherein said outer bush is fixedly mounted upon a frame.
3. A ram guidance system according to claim 1 wherein said outer bush comprises an open ended hollow cylindrical tube having an annular shoulder that projects radially outwardly from a top end.
4. A ram guidance system according to claim 1 wherein said inner bush comprises an open ended hollow cylindrical tube and an annular shoulder that projects radially outwardly from a bottom end.

5. A ram guidance system according to claim 1 wherein said anti-friction bearing assembly includes a plurality of circularly and longitudinally spaced ball bearings that are each confined in a bearing cage.

6. A ram guidance system according to claim 5 wherein said bearing cage is cylindrical and sized so as to encircle said inner bush while fitting within said passageway of said outer bush.

7. A ram guidance system according to claim 6 wherein said ball bearings are pre-loaded against an outer surface of said inner bush.

8. A ram guidance system according to claim 1 comprising a ram plate securely and releaseably fastened to said inner bush.

9. A ram guidance system according to claim 8 wherein said rod is releaseably fastened to an internal portion of said ram.

10. A ram guidance system according to claim 1 wherein said anti-friction bearing assembly via a preloaded condition, acts to guide the reciprocating movement of said inner bush relative to said outer bush.

11. A metal stamping system for operating a die set comprising:  
a stamping press including a reciprocating ram;

an outer bush mounted to a portion of said stamping press and comprising a passageway sized and arranged so that said ram extends through said passageway so as to be enclosed by said outer bush;

an inner bush coaxially mounted to (i) said outer bush and (ii) a portion of said ram; and

an anti-friction bearing assembly positioned between said outer bush and said inner bush so as to guide their relative movement.

12. A metal stamping system according to claim 11 wherein said outer bush is fixedly mounted upon a frame.

13. A metal stamping system according to claim 11 wherein said outer bush comprises an open ended hollow cylindrical tube having an annular shoulder that projects radially outwardly from a top end.

14. A metal stamping system according to claim 11 wherein said inner bush comprises an open ended hollow cylindrical tube and an annular shoulder that projects radially outwardly from a bottom end.

15. A metal stamping system according to claim 11 wherein said anti-friction bearing assembly includes a plurality of circularly and longitudinally spaced ball bearings that are each confined in a bearing cage.

16. A metal stamping system according to claim 15 wherein said bearing cage is cylindrical and sized so as to encircle said inner bush while fitting within said passageway of said outer bush.

17. A metal stamping system according to claim 16 wherein said ball bearings are pre-loaded against an outer surface of said inner bush.

18. A metal stamping system according to claim 11 comprising a ram plate securely and releaseably fastened to said inner bush.

19. A metal stamping system according to claim 18 wherein said rod is releaseably fastened to an internal portion of said ram.

20. A metal stamping system according to claim 11 wherein said anti-friction bearing assembly via a preloaded condition, acts to guide the reciprocating movement of said inner bush relative to said outer bush.

21. A metal stamping system according to claim 12 wherein forces generated by said reciprocating ram are absorbed by the vertically oriented portions of said frame.

22. A metal stamping system for operating a die set comprising:

a stamping press including a reciprocating ram supported upon a pair of spaced apart tie rods;

an outer bush mounted to a portion of said stamping press located between said tie rods, said outer bush comprising a passageway sized and arranged so that said ram extends through said passageway so as to be enclosed by said outer bush;

an inner bush coaxially mounted to (i) said outer bush and (ii) a portion of said ram; and

an anti-friction bearing assembly positioned between said outer bush and said inner bush so as to guide their relative movement.

23. A metal stamping system according to claim 22 wherein said outer bush is fixedly mounted upon a support that is adjustably fastened between said tie rods.

24. A metal stamping system according to claim 22 wherein said outer bush comprises an open ended hollow cylindrical tube having an annular shoulder that projects radially outwardly from a top end.

25. A metal stamping system according to claim 22 wherein said inner bush comprises an open ended hollow cylindrical tube and an annular shoulder that projects radially outwardly from a bottom end.

26. A metal stamping system according to claim 22 wherein said anti-friction bearing assembly includes a plurality of circularly and longitudinally spaced ball bearings that are each confined in a bearing cage.

27. A metal stamping system according to claim 26 wherein said bearing cage is cylindrical and sized so as to encircle said inner bush while fitting within said passageway of said outer bush.

28. A metal stamping system according to claim 26 wherein said ball bearings are pre-loaded against an outer surface of said inner bush.

29. A metal stamping system according to claim 22 comprising a ram plate securely and releaseably fastened to said inner bush.

30. A metal stamping system according to claim 28 wherein said rod is releaseably fastened to an internal portion of said ram.

31. A metal stamping system according to claim 22 wherein said anti-friction bearing assembly via a preloaded condition, acts to guide the reciprocating movement of said inner bush relative to said outer bush.

32. A metal stamping system according to claim 23 wherein forces generated by said reciprocating ram are absorbed and distributed by said pair of tie rods .